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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/500,259	06/25/2004	Paul M. Lindberg	104497-423-(PCT) US	8922
24964	7590	11/21/2007		
GOODWIN PROCTER L.L.P 599 LEXINGTON AVE. NEW YORK, NY 10022			EXAMINER LE, DANG D	
			ART UNIT 2834	PAPER NUMBER
			MAIL DATE 11/21/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/500,259

Applicant(s)

LINDBERG ET AL.

Examiner

Dang D. Le

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 and 21-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 21 and 23 is/are allowed.
- 6) ☒ Claim(s) 1-19 and 22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments with respect to claims 1-19 and 22 have been considered but are moot in view of the new ground(s) of rejection.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
4. Claims 1-3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brende et al. (4,439,699) in view of Raj et al. (5,452,520).

Regarding claim 1, Brende et al. shows a magnetic motor (Figure 2) comprising:

- A first motor assembly (37) comprising:

- A first surface layer (inner circumferential surface of 37), and a first magnet (35 - does not have to be permanent magnet), fixed with respect to the first surface layer, structured to generate a first magnetic field; and
- A second motor assembly (10) comprising:
  - A second magnet (18), and a second surface layer (outer circumferential surface of 14 between walls 16) in the form of the sleeve, located so that at least a portion of the second surface layer is in contact with at least a portion of the first surface layer, with the second surface layer comprising a material that has relative magnetic permeability of  $x$ , wherein  $x$  is greater than 2.0,
  - Said second motor assembly structured to generate a second magnetic field defined by at least said second magnet (flux lines in Figure 2) and said second surface layer, with the first and second motor assemblies being structured so that forces caused by the interaction of the first and second magnetic fields will cause the first motor assembly and the second motor assembly to move relative to each other, and with the first and second surface layers being in moving contact to at least partially guide the relative motion of the first and second motor assemblies.

Brende et al. does not show the first and second surface layers as bearing surface layers.

For the purpose of reducing cost, Raj et al. teaches to form the bearing surface layers (30b) between the moving component (27) and the stationary component (38, 40).

Since Brende et al. and Raj et al. are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

Regarding claim 2, Brende et al. also shows the motor being high thrust.

Regarding claims 3 and 7, it is noted that Brende et al. also shows x being greater than 100 (core 50 made of steel).

5. Claims 4-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brende et al. in view of Raj et al. and further in view of Trench (3,149,255).

Regarding claim 4, the machine of Brende et al. modified by Raj et al. shows all of the limitations of the claimed invention including the first motor assembly being a stator; the first bearing surface layer comprising a bushing; the first magnet being an electromagnet such that the first magnetic field can be selectively controlled; the second motor assembly comprise at least one permanent magnet except for the shaft; the second bearing surface layer being located over at least a portion of the shaft; and the second magnet located within the shaft.

For the purpose of transmitting output power externally, Trench shows the shaft (24); the second bearing surface layer (surface of pole 18) being located over at least a portion of the shaft; and the second magnet (17) located within the shaft.

Since Brende et al., Raj et al., and Trench are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to include the shaft as taught by Trench for the purpose discussed above.

Regarding claim 5, it is noted that Brende et al. also shows a doubly salient (poles formed on left and right) motor.

Regarding claim 6, it is noted that Trench also shows the shaft comprises: a plurality of annular permanent magnets (17); a plurality of pole pieces (18), with the magnets and the pole pieces being assembled in an alternating manner (Figure 1); and a sleeve (19) disposed at least partially around the alternating magnets and pole pieces (not claimed "entirely"), with the sleeve comprising an outer major surface, and the second bearing surface layer (surface of poles 18) being located at least partially along the outer major surface of the sleeve.

6. Claims 8-10 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mielke (6,157,100) in view of Raj et al. (6,812,598).

Regarding claim 8, Mielke shows a magnetic motor (Figure 3) comprising:

- A first motor assembly (17) comprising:
- A first surface layer (surface of 19), and a first magnet (14a), fixed with respect to the first surface layer, structured to generate a first magnetic field; and
- A second motor assembly (6) comprising:
- A second surface layer (surface of 7), located so that at least a portion of the second surface layer is in contact with at least a portion of the first surface

layer, with the second surface layer comprising a material that has relative magnetic permeability of  $x$ , wherein  $x$  is greater than 2.0 (soft magnetic material), and

- A second magnet (6), fixed with respect to the second surface layer, structured to generate a second magnetic field, with the first and second motor assemblies being structured so that forces caused by the interaction of the first and second magnetic fields will cause the first motor assembly and the second motor assembly to move relative (left-right) to each other, and with the first and second surface layers being in moving contact to at least partially guide the relative motion of the first and second motor assemblies.

Mielke does not show a first bearing surface layer and a second bearing surface layer.

For the purpose of reducing cost, Raj et al. teaches to form the bearing surface layers (30b) between the moving component (27) and the stationary component (40).

Since Mielke and Raj et al. are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to make the first and second surface layers as the first and second bearing surface layers as taught by Raj et al. for the purpose discussed above.

It is noted that Mielke also shows second bearing surface layer (surface of 7) having a magnetic permeability, saturation characteristic (made of soft magnetic), shape

(of a disk) and location (axially within the coil 16) so that at least a portion (circumferential surface) of the second bearing surface layer is magnetically saturated by a magnetic field of the second magnet.

Regarding claims 9 and 10, Mielke also shows the unsaturated portion being the center of the soft magnetic disk (7) and the saturated and unsaturated portions being located in the vicinity of the second magnet (16).

Regarding claim 18, the claim is similar to claim 8 except that it recites the second bearing surface layer being anisotropic in its magnetic permeability. It is noted that Mielke also shows the second bearing surface layer being anisotropic in its magnetic permeability (axial field of (7) being different with radial field).

7. Claims 11, 12, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mielke in view of Raj et al. and further in view of Trench (3,149,255).

Regarding claims 11 and 19, the machine of Mielke modified by Raj et al. includes all of the limitations of the claimed invention including the first motor assembly being a stator; the first bearing surface layer comprising a bushing; the first magnet being an electromagnet such that the first magnetic field can be selectively controlled; the second motor assembly comprise at least one permanent magnet except for the shaft; the second bearing surface layer being located over at least a portion of the shaft; and the second magnet located within the shaft.

For the purpose of transmitting output power externally, Trench shows the shaft (24); the second bearing surface layer (surface of pole 18) being located over at least a portion of the shaft; and the second magnet (17) located within the shaft.



Since Mielke, Raj et al., and Trench are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to include the shaft as taught by Trench for the purpose discussed above.

Regarding claim 12, it is noted that Mielke also shows the unsaturated and saturated portions, which are the center and surface of the disk (7), respectively.

8. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brende et al. in view of Raj et al. and further in view of Nanba et al.

Regarding claims 13 and 14, the machine of Brende et al. modified by Raj et al. shows all of the limitations of the claimed invention except for x being greater than 500 Gauss or residual magnetization being greater than 1000 Gauss.

Nanba et al. shows x (magnet 61 used as bearing surface) being greater than 500 Gauss or residual magnetization being greater than 1000 Gauss for the purpose of increasing magnetic field strength.

Since Brende et al., Raj et al., and Nanba et al. are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use x greater than 500 Gauss or residual magnetization greater than 1000 Gauss as taught by Nanba et al. for the purpose discussed above.

9. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brende et al. in view of Raj et al. and Nanba et al. and further in view of Trench (3,149,255).

Regarding claim 15, the machine of Brende et al. modified by Raj et al. and Nanba et.al. includes all of the limitations of the claimed invention including the first motor assembly being a stator; the first bearing surface layer comprising a bushing; the first magnet being an electromagnet such that the first magnetic field can be selectively controlled; the second motor assembly comprise at least one permanent magnet except for the shaft; the second bearing surface layer being located over at least a portion of the shaft; and the second magnet located within the shaft.

For the purpose of transmitting output power externally, Trench shows the shaft (24); the second bearing surface layer (surface of pole 18) being located over at least a portion of the shaft; and the second magnet (17) located within the shaft.

Since Brende et al., Raj et al., Nanba et al., and Trench are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to include the shaft as taught by Trench for the purpose discussed above.

Regarding claims 16 and 17, it is noted that Brende et al. and Trench also shows motor being doubly salient motor and the shaft comprising: a plurality of annular permanent magnets (17); a plurality of pole pieces (18), with the magnets and the pole

pieces being assembled in an alternating manner (Figure 1); and a sleeve (19) disposed at least partially around the alternating magnets and pole pieces (not claimed "entirely"), with the sleeve comprising an outer major surface, and the second bearing surface layer (surface of poles 18) being located at least partially along the outer major surface of the sleeve.

10. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Meeks (3,614,181) in view of Goldowsky (4,379,598).

Regarding claim 22, Meeks shows a method of making a magnetic shaft (Figure 1) comprising the steps of:

- Providing a stack comprising a plurality of axially stacked discrete magnets (11) having an initial stack diameter.

Meeks does not show the steps of providing a sleeve having a magnetic permeability greater than 2.0; and assembling the sleeve over the stack and to form a shaft. The magnets (11) would be broken easily because there is nothing to protect the surface.

Goldowsky provides a sleeve (42, Figure 6, Iron) having a magnetic permeability greater than 2.0; and assembling the sleeve over the magnet and to form a shaft.

Since Meeks and Goldowsky are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to provide a sleeve having a magnetic permeability

greater than 2.0; and assembling the sleeve over the stack and to form a shaft as taught by Goldowsky for the purpose discussed above.

***Allowable Subject Matter***

11. Claims 21 and 23 are allowed.

***Information on How to Contact USPTO***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dang D. Le whose telephone number is (571) 272-2027. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on (571) 272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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A handwritten signature in black ink, appearing to read 'Dangle', written in a cursive style.

**DANGLE**  
**PRIMARY EXAMINER**